STATEMENT OF WORK (SOW)
RR-2 Animal Access Unit (AAU) Hardware Build

NASA Ames Research Center has a requirement for the fabrication and assembly of an Animal Access Unit (AAU). The AAU is part of the Rodent Research Hardware System which provides a research platform aboard the International Space Station for long-duration rodent experiments in space.

Requirements (as Specified on the Baselined Drawing)

1) Specifications

The requirements for these parts are as follows:

a) The parts listed here shall be manufactured from Certified Material Stock, primarily 6061 T6/T651 and Polycarbonate 9034 per the Baselined drawings Bill of Material (BOM) and per drawing specifications.

b) All material purchased for machining / fabrication purposes shall be per the Drawing BOM and shall be delivered with Certificate of Compliance (COCs) and Material Test Reports(MTRs).
As part of this procurement the Contractor shall provide certification and documentation that the individual piece parts have been manufactured per the Baselined Drawings, have passed 100% First Article Dimensional Inspection per Drawing Dimensions, Tolerances, and subsequent Critical Dimensional Inspection on the balance of the piece parts if required by the applicable Baselined Drawing Inspection Criteria.

2) Documentation

a. Submittal of all documentation should be via digital format using the Minx file system.
b. All certifications shall have traceability to the Purchase Order to which the material or hardware was procured.
c. Packing slips from the Contractor for piece parts that are complete shall have traceability to the NASA Purchase Order, and shall include the Part Number, Drawing Revision and Quantity provided.
d. Hardware Purchase Orders for Raw Material Stock and/or Fasteners shall have traceability on the Packing Slip from the source of procurement and shall include the Purchase Order Number, Part Number and Quantity Purchased.
e. All procured items and outsourced processes shall have traceable COCs.
f. All items with a shelf life shall include an expiration date with lot number.
g. Process Certifications (i.e Anodize) shall have traceability on the Packing Slip and shall include the Purchase Order Number, Part Number, Drawing Process Specification callout (I.e. Anodize in Accordance With MIL-A-8625, Type II, Class I, Clear) and Quantity of Parts Processed.

3) Fabrication

a) *Material* – Only material called out in the BOM shall be used.
b) *Cleaning* – Only Approved Cleaning Fluids shall be as called out in the Drawing Notes.
c) *Processes* – All processes called out in the Drawing Notes shall apply (i.e. Plating, Riveting, Insert Installation, Part Mark and/or Bag and Tag)
d) *Fabricate and handle all 9034 Polycarbonate in accordance to attached NASA ADS*-87-00-019.

4) Inspection

a) All parts shall have 100% First Article Inspection Performed and Verified to the Drawing.
b) In the event of Out Of Tolerance (OOT) condition noted on the First Article Inspection Report, the NASA Customer shall be notified and no further fabrication shall take place on the OOT piece until the NASA Customer Representative gives Approval to Proceed.
c) Inspection reports of piece parts shall be forwarded on to NASA Ames for review throughout the manufacturing cycle.
d) Secondary Inspections:
The balance of the piece parts shall be inspected per the Individual Drawing Inspection Criteria which shall include only critical dimensions or No Additional Inspection Required.
e) A First Article Inspection Report is required to be performed by the supplier and shall be submitted to NASA ARC with the shipment to ensure compliance to the applicable drawings and specifications. This process shall be repeated when changes occur that invalidate the original results (e.g., engineering changes, manufacturing process changes, tooling changes).The first article item(s) shall be identified by the supplier and shall be accompanied by the First Article Inspection Report (FAIR). The First Article Inspection Report shall be formatted in accordance with AS9102.
f) For each subsequent production run, a 100% Inspection Report is required to be performed on a representative item and shall be submitted to NASA ARC with the shipment. NASA ARC drawings identify critical inspection parameters for all parts, sub-assemblies and assemblies that require dimensional inspection reporting. All components, including subcontracted components, will be dimensionally inspected and documented by a NASA QA inspector or the qualified supplier .
g) With each production order/PO the following shall be provided; legible and reproducible copies of relevant documents. Relevant documents for components include PO's, MTR's, material and process COC's, inspection reports, non-conformance reports (PRACA's), and test procedures(ATOP's). These documents shall include actual results identifiable by part number, lot number, serial number, specification and date code (as applicable). Reports must contain the test/inspection stamp of the individual performing and/or witnessing the test, or the signature and title of the authorized representative of the supplier.

h) Any changes that affect product requirements require approval from the respective NASA ARC POC prior to implementation. Changes are defined as changes in the manufacturing site, sub-tier suppliers, product configuration, materials, production processes, inspection/testing methods.
i) Suppliers shall document and maintain a quality system that is compliant to the requirements of ISO 9001:2008.
Inspection Criteria for fasteners used in Rodent Habitat 2 (RR2) (AAU, assemblies and sub-assemblies) hardware being assembled by sub-contracted suppliers.
j) All fasteners for the AAU are defined per NASA-STD-5019
    - Per paragraph 4.1.1, as "Non-Fracture Critical".
    - Per paragraph 4.1.1.2, as "Contained Parts ".
    - NASA-STD-6008 defines fastener control requirements for fasteners used in spaceflight hardware.
k) Specialty fasteners are identified in AAU drawing notes as requiring CoC's only. Specialty fasteners such as non-mil spec fasteners (COTS) are allowable, provided they are specified by engineering, suitably inspected and are purchased from approved vendors.
l) For all fasteners a Visual Inspection will be performed on the entire lot at 1X magnification (unaided eye). Also, a sample of each lot shall be inspected at 10X magnification.
m) All Inspection Reports shall include:
    - Tooling Control Numbers and Calibration Due Date
    - NASA PO Number
    - Part Number and Drawing Revision
    - Serial Numbers (if applicable)
    - Date Inspected
    - Units measured (inches vs. cm)
    - Measured Dimensions vs. Drawing dimensions
    - Pass / Fail Column
    - Inspector's Signature / Stamp

5) <u>Deliverables, Buy Off Criteria and Receipt of Completed Hardware</u>

a) Upon completion of hardware fabrication, inspection, top level assembly per the provided Assembly procedure Document(Procedure to be used if required) and documentation/certification package per the NASA PO, the Contractor shall contact the NASA POC and arrange for a hardware and documentation Source Inspection .
b) Digital copies of complete data packages for each piece part and assembly, to include all COC's, MTR's , inspection reports and documentation. Conformance/non-conformance/corrective action records, as required.
c) NASA will send an appropriate QA representative to the Contractor's facility to validate hardware and documentation conformance to the NASA PO.
d) After completion of the unit, a modified functional check per document #6199 Rev. A shall be performed with the NASA QA representative present.

e) Before the unit is shipped, Kapton backed shock sensors shall be applied to the unit in all three axis. The shipping container, Kapton tape and shock sensors shall be provided by NASA.
f) Delivery of fully assembled unit will be via Fedex Custom critical White Glove Service or equivalent.

Drawing Number and Revision, Description/Nomenclature and Quantity of Parts Requested for Fabrication and Assembly

Drawing, REV	Description/Nomenclature	Qty
103803-001 Rev C	Connector Panel	1

6) Government Furnished Equipment (GFE)

a) B600 95A Polyurethane 8"X8"
b) B600 95A Polyurethane 14"X14"
c) Polyester Polyurethane 15"X15" P/N 8070
d) Stainless steel Wire #3458T23 Type 302 (Material for Part on drawing 102984 Wire 1X19 strand 1/16 Dia.)
e) Wire Sintered 2 piece min. (Material for part#102986-505)
f) Shipping Container
g) Screw, Self Locking Part# NAS1189E04P4J
h) Screw, Self Locking Part# NAS1189E04P5J
i) Screw, Self Locking Part# NAS1189E04P6J
j) Screw, Self Locking Part# NAS1189E04P7J
k) Kapton Tape
l) Shock Sensors

7) Scheduling

a) Project tag-ups will be held on a weekly basis to discuss schedule, issues or concerns and any relevant information. The tag up will be via telecom with NASA project Lead and Contractor project lead as well as supporting staff as needed.
b) Provide a schedule that details the different manufacturing and assembly tasks with durations to completion.
c) All work should be completed within 60 working days after receipt of order.

8) Delivery Point

NASA Ames Research Center
Attn : Ricardo Olivares
Bldg. N240, Room 135
Moffett Field, CA 90435-0001